

# Appendix K

## SOIL DESCRIPTIONS

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## Four major soil associations occur in the study area of Reconnaissance Area 1.

- ***Monongahela-Kanawha-Chagrín***-These soils are deep and moderately well to well drained and were formed in acid and lime-induced weathered materials. The slopes are nearly level to strongly sloping. The formation of these soils are along high and low floodplains and stream terraces. The Monongahela series has a medium textured, dark brown surface layer, with a medium to moderately fine textured, yellowish brown subsoil. The Kanawha series has a moderately coarse, dark brown surface layer and a moderately coarse to medium brown and reddish brown subsurface. The Chagrín soils have a medium textured, dark grayish brown loam surface layer. The subsoil is medium textured and dark brown loam. This soil association has a high available water capacity and moderate permeability.
- ***Shouns-Gilpin-Cateache-Berks***-The Shouns series consists of very deep, well drained, moderately permeable soils on uplands. These soils formed in colluvium from sandstone, siltstone, and shale. They are on the lower part of hillsides, benches, and foot slopes. Slopes range from 2 to 70 percent. The Gilpin series consists of moderately deep, well drained soils formed in residuum of nearly horizontal interbedded shale, siltstone, and some sandstone of the Allegheny Plateau. They are on gently sloping to steep, convex, dissected uplands. Slope ranges from 0 to 70 percent. Permeability is moderate. Mean annual precipitation is 43 inches, and mean annual air temperature is 51 degrees F. The Cateache series consists of moderately deep, well drained soils formed in residuum weathered mainly from red interbedded siltstone and shale. Slope ranges from 3 to 80 percent. Mean annual precipitation is 37.8 inches. Mean annual temperature is 53 degrees F. The Berks series consists of moderately deep, well drained soils formed in residuum weathered from shale, siltstone and fine grained sandstone on rounded and dissected uplands. Slope ranges from 0 to 80 percent. Permeability is moderate or moderately rapid. Mean annual precipitation is 42 inches. Mean annual temperature is 52 degrees F.
- ***Weikert-Litz-Clarksburg***- The Weikert series consist of shallow, well drained soils formed in material that weathered from interbedded gray and brown acid shale, siltstone, and fine-grained sandstone on gently sloping to very steep areas on uplands. Slope ranges from 0 to 100 percent. Permeability is moderately rapid. Mean annual precipitation is about 42 inches, and the mean annual air temperature is about 52 degrees F. The Litz series consists of moderately deep, well drained soils formed in residuum from leached calcareous shale and with widely spaced thin layers of limestone. These soils are found on upland ridges and sideslopes mainly in the Ridge and Valley areas of the Appalachians. Permeability is moderate. Slopes range from 2 to 80 percent. Mean annual temperature is about 53 degrees F and mean annual precipitation is about 44 inches. The Clarksburg series consists of

well drained soils formed from weathering of interbedded siltstone, sandstone, and limestone. Slopes range from 0 to 25 percent.

- ***Frederick-Carbo***-The Frederick series consists of very deep, well drained soils formed in residuum derived mainly from dolomitic limestone with interbeds of sandstone, siltstone, and shale. They are on are nearly level to very steep uplands. Permeability is moderate. Slopes range from 0 to 60 percent. Mean annual precipitation is about 42 inches, and mean annual temperature is about 55 degrees F. Soils of the Carbo series are moderately deep, well drained, and slowly permeable. They formed in material weathered from limestone bedrock. They are nearly level to very steep soils on uplands in the Appalachian Ridges and Valleys. Mean annual temperature is about 55 degrees F., and mean annual precipitation is about 40 inches. Slopes range from 2 to 65 percent.

#### **Six major soil associations occur in the study area of Reconnaissance Area 2.**

- ***Monongahela-Kanawha-Chagrin***-These soils are deep and moderately well to well drained and were formed in acid and lime-induced weathered materials. The slopes are nearly level to strongly sloping. The formation of these soils are along high and low floodplains and stream terraces. The Monongahela series has a medium textured, dark brown surface layer, with a medium to moderately fine textured, yellowish brown subsoil. The Kanawha series has a moderately coarse, dark brown surface layer and a moderately coarse to medium brown and reddish brown subsurface. The Chagrin soils have a medium textured, dark grayish brown loam surface layer. The subsoil is medium textured and dark brown loam. This soil association has a high available water capacity and moderate permeability.
- ***Muskingum***-The Muskingum series consists of moderately deep, well drained, moderately permeable soils formed in residuum weathered from interbedded siltstone, sandstone and shale. Slopes range from 2 to 75 percent
- ***Gilpin-Dekalb***-The Gilpin soils are strongly sloping to very steep and are on uplands. They formed in acid material weathered from interbedded siltstone, shale, and sandstone. Gilpin soils have a very dark grayish brown and yellowish brown, medium textured surface layer and a strong brown, medium and moderately fine textured subsoil. The Dekalb series consists of moderately deep, excessively drained soils formed in material weathered from gray and brown acid sandstone in places interbedded with shale and graywacke. Slope ranges from 0 to 80 percent. Permeability is rapid. Mean annual precipitation is about 48 inches and mean annual air temperature is about 53 degrees F.

- **Rock outcrop-Gilpin-Dekalb**-The Gilpin soils are strongly sloping to very steep and are on uplands. They formed in acid material weathered from interbedded siltstone, shale, and sandstone. Gilpin soils have a very dark grayish brown and yellowish brown, medium textured surface layer and a strong brown, medium and moderately fine textured subsoil. The Dekalb series consists of moderately deep, excessively drained soils formed in material weathered from gray and brown acid sandstone in places interbedded with shale and graywacke. Slope ranges from 0 to 80 percent. Permeability is rapid. Mean annual precipitation is about 48 inches and mean annual air temperature is about 53 degrees F.
- **Pineville-Gilpin-Dekalb-Buchanan**-The Pineville series consists of very deep, well drained soils with moderately rapid permeability. These soils formed in colluvium derived from sandstone, shale, and siltstone. Pineville soils are on mountain coves, lower sideslopes, and footslopes. Slope ranges from 8 to 80 percent but is dominantly 25 to 60 percent. Mean annual precipitation is 43 inches, and mean annual temperature is about 54 degrees F. The Gilpin soils are strongly sloping to very steep and are on uplands. They formed in acid material weathered from interbedded siltstone, shale, and sandstone. Gilpin soils have a very dark grayish brown and yellowish brown, medium textured surface layer and a strong brown, medium and moderately fine textured subsoil. The Dekalb series consists of moderately deep, excessively drained soils formed in material weathered from gray and brown acid sandstone in places interbedded with shale and graywacke. Slope ranges from 0 to 80 percent. Permeability is rapid. Mean annual precipitation is about 48 inches and mean annual air temperature is about 53 degrees F. Soils of the Buchanan series are very deep, somewhat poorly and moderately well drained, and slowly permeable. They formed in colluvium on mountain footslopes, sideslopes and in valleys that is derived from acid sandstone, quartzite, siltstone, and shale. Slope ranges from 0 to 45 percent. Mean annual precipitation is about 105 cm (42 inches), and mean annual air temperature is about 12 degrees C (53 degrees F).
- **Shouns-Gilpin-Cateache-Berks**-The Shouns series consists of very deep, well drained, moderately permeable soils on uplands. These soils formed in colluvium from sandstone, siltstone, and shale. They are on the lower part of hillsides, benches, and foot slopes. Slopes range from 2 to 70 percent. The Gilpin soils are strongly sloping to very steep and are on uplands. They formed in acid material weathered from interbedded siltstone, shale, and sandstone. Gilpin soils have a very dark grayish brown and yellowish brown, medium textured surface layer and a strong brown, medium and moderately fine textured subsoil. The Cateache series consists of moderately deep, well drained soils formed in residuum weathered mainly from red inter-bedded siltstone and shale. Slope ranges from 3 to 80 percent. Mean annual precipitation is 37.8 inches. Mean annual temperature is 53 degrees F. The Berks series consists of moderately deep, well drained soils formed in

residuum weathered from shale, siltstone and fine grained sandstone on rounded and dissected uplands. Slope ranges from 0 to 80 percent. Permeability is moderate or moderately rapid. Mean annual precipitation is 42 inches. Mean annual temperature is 52 degrees F.

### **Nine major soil associations occur in the study area of Reconnaissance Area 3.**

- ***Urban land-Melvin-Lindside-Kanawha***-This complex consists of areas covered by urban structures such as asphalt, concrete, buildings, or other impervious materials. The Melvin series consists of deep, poorly drained soils formed in alluvial material washed from lime influenced and acid soils on uplands. Slopes range from 0 to 3 percent. Melvin soils are on the landscape with the well-drained Ashton, Huntington, and Kanawha soils and the moderately well drained Lindside soils. The Lindside series consists of deep, moderately well drained soils formed in alluvial material washed from lime-influenced and acid soils on uplands. The Lindside soils are located on flood plains. Slopes range from 0 to 5 percent, but are dominantly less than 3 percent. Lindside soils are on the landscape with the well-drained Ashton, Huntington, and Kanawha soils and the poorly drained Melvin soils. The Kanawha series consists of deep, well drained soils formed in alluvial material that washed from lime influenced and acid soils on uplands. The Kanawha soils are on high flood plains and low terraces. Slopes range from 0 to 8 percent. Kanawha soils are on the landscape with the well drained Ashton and Huntington soils, the moderately well drained Lindside soils, and the poorly drained Melvin soils.
- ***Upshur-Gilpin***-The Upshur soils are gently sloping to very steep and are on uplands. They formed in lime-influenced material weathered mainly from clay shale. Upshur soils have a reddish brown, moderately fine textured surface layer and a dark red, fine textured subsoil. The Gilpin soils are strongly sloping to very steep and are on uplands. They formed in acid material weathered from interbedded siltstone, shale, and sandstone. Gilpin soils have a very dark grayish brown and yellowish brown, medium textured surface layer and a strong brown, medium and moderately fine textured subsoil.
- ***Pineville-Gilpin-Dekalb-Buchanan***-The Pineville series consists of very deep, well drained soils with moderately rapid permeability. These soils formed in colluvium derived from sandstone, shale, and siltstone. Pineville soils are on mountain coves, lower sideslopes, and footslopes. Slope ranges from 8 to 80 percent but is dominantly 25 to 60 percent. Mean annual precipitation is 43 inches, and mean annual temperature is about 54 degrees F. The Gilpin soils are strongly sloping to very steep and are on uplands. They formed in acid material weathered from interbedded siltstone, shale, and sandstone. Gilpin soils have a very dark grayish brown and yellowish brown, medium textured surface layer and a strong brown, medium and moderately fine textured subsoil. The Dekalb series consists of moderately

deep, excessively drained soils formed in material weathered from gray and brown acid sandstone in places interbedded with shale and graywacke. Slope ranges from 0 to 80 percent. Permeability is rapid. Mean annual precipitation is about 48 inches and mean annual air temperature is about 53 degrees F. Soils of the Buchanan series are very deep, somewhat poorly and moderately well drained, and slowly permeable. They formed in colluvium on mountain footslopes, sideslopes and in valleys that is derived from acid sandstone, quartzite, siltstone, and shale. Slope ranges from 0 to 45 percent. Mean annual precipitation is about 105 cm (42 inches), and mean annual air temperature is about 12 degrees C (53 degrees F).

- **Rock outcrop-Gilpin-Dekalb**-The Gilpin soils are strongly sloping to very steep and are on uplands. They formed in acid material weathered from interbedded siltstone, shale, and sandstone. Gilpin soils have a very dark grayish brown and yellowish brown, medium textured surface layer and a strong brown, medium and moderately fine textured subsoil. The Dekalb series consists of moderately deep, excessively drained soils formed in material weathered from gray and brown acid sandstone in places interbedded with shale and graywacke. Slope ranges from 0 to 80 percent. Permeability is rapid. Mean annual precipitation is about 48 inches and mean annual air temperature is about 53 degrees F.
- **Gilpin-Dekalb**-The Gilpin soils are strongly sloping to very steep and are on uplands. They formed in acid material weathered from interbedded siltstone, shale, and sandstone. Gilpin soils have a very dark grayish brown and yellowish brown, medium textured surface layer and a strong brown, medium and moderately fine textured subsoil. The Dekalb series consists of moderately deep, excessively drained soils formed in material weathered from gray and brown acid sandstone in places interbedded with shale and graywacke. Slope ranges from 0 to 80 percent. Permeability is rapid. Mean annual precipitation is about 48 inches and mean annual air temperature is about 53 degrees F.
- **Pineville-Guyandotte-Dekalb**-The Pineville series consists of very deep, well drained soils with moderately rapid permeability. These soils formed in colluvium derived from sandstone, shale, and siltstone. Pineville soils are on mountain coves, lower sideslopes, and footslopes. Slope ranges from 8 to 80 percent but is dominately 25 to 60 percent. Mean annual precipitation is 43 inches, and mean annual temperature is about 54 degrees F. The Guyandotte series consists of well drained soils formed from neutral sandstone, shale, and siltstone. The Dekalb series consists of moderately deep and excessively drained soils formed in material weathered from gray and brown acid sandstone in places interbedded with shale and graywacke. Slope ranges from 0 to 80 percent. Permeability is rapid. Mean annual precipitation is about 48 inches and mean annual air temperature is about 53 degrees F.

- ***Pope-Craigsville-Chavies***-The Pope series consists of very deep and well drained soils formed in alluvium on flood plains. Permeability is moderate or moderately rapid. Slopes range from 0 to 4 percent. Mean annual precipitation is about 48 inches and mean annual air temperature is about 53 degrees F. near the type location. Soils of the Craigsville series are very deep and well drained to somewhat excessively drained. They formed in moderately coarse and coarse textured sediments. Permeability is moderately rapid or rapid. They are nearly level to gently sloping soils on flood plains. Slopes range from 0 to 5 percent. Mean annual temperature is about 50 degrees F., and mean annual precipitation is about 40 inches. The Chavies series consist of very deep, well drained soils formed in alluvium on flood plains. Slopes range from 0 to 55percent. Annual temperature is about 52 degrees F.
- ***Urban land-Laidig-Kanawha***-This is generally typical of urban areas and soils along the Kanawha River. The slope is nearly level and gently sloping. The Kanawha soils were formed in lime-influenced alluvial material intermingled with sandstone, shale and siltstone, washed from the upland soils. These soils are deep with a dark brown, moderately coarse surface layer and a dark yellowish brown, moderately coarse to medium textured subsoil.The Laidig series consists of very deep, well drained soils formed in colluvium from sandstone, siltstone, and some shale. They are gently sloping to very steep soils on benches and foot slopes. Permeability is moderate or moderately rapid above the fragipan and moderately slow or slow in the fragipan. Slope ranges from 0 to 55 percent. Near the type location, the mean annual precipitation is about 34 inches, and the mean annual temperature is about 51 degrees F.
- ***Vincent-Monongahela***-The Vincent series consists of deep, moderately well drained soils formed in alluvium and in lacustrine sediments washed from lime-influenced and acid soils on uplands. Slopes range from 3 to 15 percent. Vincent soils are on the landscape with the well-drained Allegheny soils, the moderately well drained Monongahela soils, the somewhat poorly drained Tyler soils, and the Udifluvents and Fluvaquents. The Monongahela series consists of deep, moderately well drained soils formed in alluvial material washed from acid soils on uplands. Slopes range from 3 to 15 percent. Mean annual precipitation is about 40 inches, and mean average temperature is about 52 degrees F.

**Five major soil associations occur in the study area in Reconnaissance Area 4.**

- ***Sciotoville-Melvin-Lakin-Ashton***-The Sciotoville series consists of very deep, moderately well drained soils that are shallow or moderately deep to a fragipan. These soils formed in old alluvium. They are on terraces. Slope



ranges from 0 to 25 percent. Mean annual precipitation is about 42 inches, and mean annual air temperature is about 54 degrees F.

The Melvin series consists of deep, poorly drained soils formed in alluvial material washed from lime influenced and acid soils on uplands. The Melvin soils are on flood plains along the Kanawha River. The flooding frequency of these soils has been reduced by flood-control structures on the Kanawha River System. Slopes range from 0 to 3 percent. Melvin soils are on the landscape with the well-drained Ashton, Huntington, and Kanawha soils and the moderately well drained Lindsides soils.

The Lakin series consists of very deep, excessively drained soils formed in coarse textured eolian or water-laid materials. Lakin soils are located dominantly on the leeward side of major stream valleys. Permeability is rapid. Slope ranges from 0 to 40 percent. Mean annual precipitation is about 38 to 44 inches and mean annual air temperature is about 50 degrees to 57 degrees F.

The Ashton series consists of deep, well drained soils formed in alluvial material washed from soils on uplands. The Ashton soils are on high flood plains along the Kanawha River. Slopes range from 0 to 8 percent. Ashton soils are on the landscape with the well-drained Huntington and Kanawha soils, the moderately well drained Lindsides soils, and the poorly drained Melvin soils.

- ***Upshur-Gilpin***-The Upshur soils are gently sloping to very steep and are on uplands. They formed in lime-influenced material weathered mainly from clay shale. Upshur soils have a reddish brown, moderately fine textured surface layer and a dark red, fine textured subsoil.

The Gilpin soils are strongly sloping to very steep and are on uplands. They formed in acid material weathered from interbedded siltstone, shale, and sandstone. Gilpin soils have a very dark grayish brown and yellowish brown, medium textured surface layer and a strong brown, medium and moderately fine textured subsoil.

- ***Urban land-Melvin-Lindsides-Kanawha***- This complex consists of areas covered by urban structures such as asphalt, concrete, buildings, or other impervious materials. The Melvin series consists of deep, poorly drained soils formed in alluvial material washed from lime influenced and acid soils on uplands. The Melvin soils are located on floodplains. Slopes range from 0 to 3 percent. Melvin soils are on the landscape with the well-drained Ashton, Huntington, and Kanawha soils and the moderately well drained Lindsides soils. The Lindsides series consists of deep, moderately well drained soils formed in alluvial material washed from lime-influenced and acid soils on uplands. Slopes range from 0 to 5 percent, but are dominantly less than 3

percent. Linside soils are on the landscape with the well-drained Ashton, Huntington, and Kanawha soils and the poorly drained Melvin soils. The Kanawha series consists of deep, well drained soils formed in alluvial material that washed from lime influenced and acid soils on uplands. The Kanawha soils are on high flood plains and low terraces. Slopes range from 0 to 8 percent. Kanawha soils are on the landscape with the well-drained Ashton and Huntington soils, the moderately well drained Linside soils, and the poorly drained Melvin soils.

- **Sciotoville-Melvin-Lakin-Ashton-**The Sciotoville series consists of very deep, moderately well drained soils that are shallow or moderately deep to a fragipan. These soils formed in old alluvium. They are on terraces. Slope ranges from 0 to 25 percent. Mean annual precipitation is about 42 inches, and mean annual air temperature is about 54 degrees F.

The Melvin series consists of deep, poorly drained soils formed in alluvial material washed from limeinfluenced and acid soils on uplands. The Melvin soils are located on flood plains. Slopes range from 0 to 3 percent. Melvin soils are on the landscape with the well-drained Ashton, Huntington, and Kanawha soils and the moderately well drained Linside soils. The Lakin series consists of very deep and excessively drained soils formed in coarse textured eolian or water-laid materials. Lakin soils are located dominantly on the leeward side of major stream valleys. Permeability is rapid. Slope ranges from 0 to 40 percent. Mean annual precipitation is about 38 to 44 inches and mean annual air temperature is about 50 degrees to 57 degrees F.

The Ashton series consists of deep, well drained soils formed in alluvial material washed from soils on uplands. Slopes range from 0 to 8 percent. Ashton soils are on the landscape with the well-drained Huntington and Kanawha soils, the moderately well drained Linside soils, and the poorly drained Melvin soils.

- **Vandalia-Senecaville-Hackers-** The Vandalia soils are strongly sloping to steep. They are on foot slopes and at the heads of drainageways. They formed in lime-influenced and acid colluvial material that moved downslope mainly from Gilpin and Upshur soils on uplands. Vandalia soils have a reddish brown, medium textured surface layer and a reddish brown, moderately fine and fine textured subsoil. The Senecaville soils are nearly level and moderately well drained. They are on flood plains. The Hackers series consists of deep, well drained soils formed in alluvial material washed from lime influenced and acid soils on uplands. The Hackers soils are located on high flood plains. Slopes range from 0 to 8 percent. Hackers soils are on the landscape with the well-drained Moshannon and Sensabaugh soils and the moderately well drained Senecaville and Zoar soils.